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WHAT IS CLAIMED IS:

1. A non-human transgenic organism comprising a transgenic element that engenders therein production of a prothrombin or prothrombin-related polypeptide.

5 2. A transgenic organism according claims 1 wherein the transgenic organism is a non-human mammal.

3. A transgenic organism according to claim 2, wherein the mammal is mouse, rat, hamster, rabbit, pig, sheep, goat, cow or horse.

4. A transgenic organism according to claim 3, wherein the mammal is pig.

10 5. A transgenic organism according to claim 1, wherein the prothrombin or prothrombin-related polypeptide therein produced accumulates in a specific tissue, compartment, fluid or product of the transgenic organism.

6. A transgenic organism according claims 5, wherein the transgenic organism is a non-human mammal.

15 7. A transgenic organism according to claim 6, wherein the mammal is mouse, rat, hamster, rabbit, pig, sheep, goat, cow or horse.

8. A transgenic organism according to claim 6, wherein the organism is female and the polypeptide accumulates in milk.

9. A transgenic organism according to claim 8, wherein the mammal is mouse, rat, hamster, rabbit, pig, sheep, goat, cow or horse.

20 10. A transgenic organism according to claim 9, wherein the mammal is pig.

sub a' 11. A transgenic organism according to any of claims 1 through 10, wherein

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the prothrombin or prothrombin-related polypeptide produced in the organism when isolated and purified has a specific activity is 75% to 125% of that of purified human prothrombin.

12. A transgenic organism according to claim 11, wherein activity is determined by a chromogenic assay of amidolytic activity or by APTT assay.

sub 2² 13. A transgenic organism according to any of claims 1 through 10, wherein the prothrombin or prothrombin-related polypeptide comprises a region having an amino acid sequence 80% to 100% identical to that of a mammalian thrombin.

14. A transgenic organism according to claim 13, wherein the prothrombin or prothrombin-related polypeptide produced in the organism when isolated and purified has a specific activity is 75% to 125% of that of purified human prothrombin.

15. A transgenic organism according to claim 14, wherein the mammalian thrombin is human thrombin.

sub 2³ 16. A transgenic organism according to claim 15, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human thrombin.

17. A transgenic organism according to any of claims 1 through 10, where in the prothrombin or prothrombin related polypeptide comprises a region having an amino acid sequence 80% to 100% identical to that of a mammalian prothrombin.

18. A transgenic organism according to claim 17, wherein the prothrombin or prothrombin-related polypeptide produced in the organism when isolated and purified has a specific activity is 75% to 125% of that of purified human prothrombin.

19. A transgenic organism according to claim 18, wherein the mammalian prothrombin is human prothrombin.

sub a⁴

20. A transgenic organism according to claim 19, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human prothrombin.

21. A transgenic organism according to claim 20, wherein activity is determined by a chromogenic assay of amidolytic activity or by APTT assay.

22. A transgenic organism according to claim 11 wherein the transgenic element comprises a promoter operatively linked to a region encoding prothrombin or a prothrombin-related polypeptide, wherein further the promoter is selected from the group consisting of the promoters of whey acidic protein genes, casein genes, lactalbumin genes and beta lactoglobulin genes.

23. A transgenic organism according to claim 14, wherein the transgenic element comprises a promoter operatively linked to a region encoding prothrombin or a prothrombin-related polypeptide, wherein further the promoter is selected from the group consisting of the promoters of whey acidic protein genes, casein genes, lactalbumin genes and beta lactoglobulin genes.

24. A transgenic organism according to claim 17, wherein the transgenic element comprises a promoter operatively linked to a region encoding prothrombin or a prothrombin-related polypeptide, wherein further the promoter is selected from the group consisting of the promoters of whey acidic protein genes, casein genes, lactalbumin genes and beta lactoglobulin genes.

25. A transgenic organism according to claim 11, wherein the promoter is the mouse long whey acidic protein promoter.

26. A transgenic organism according to claim 14, wherein the promoter is the mouse long whey acidic protein promoter.

27. A transgenic organism according to claim 17, wherein the promoter is the

mouse long whey acidic protein promoter.

28. A prothrombin or prothrombin-related polypeptide isolated from a transgenic organism.

sub 25 29. A prothrombin or prothrombin-related polypeptide isolated from a
5 transgenic organism that differs in its post-translational modification from naturally occurring prothrombin polypeptides.

30. A prothrombin or prothrombin-related polypeptide according to claim 29 that differs from naturally occurring prothrombins in any one or combination of its glycosylation, γ -carboxylation or activation by proteolytic processing.

10 sub 26 31. A prothrombin or prothrombin-related polypeptide according to any of claims 28 through 30 having a specific activity is 75% to 125% of that of purified human prothrombin.

15 32. A prothrombin or prothrombin-related polypeptide according to claim 31, wherein activity is determined by a chromogenic assay of amidolytic activity or by APTT assay.

33. A prothrombin or prothrombin-related polypeptide according to claim 31, wherein the prothrombin or prothrombin related polypeptide comprises a region having an amino acid sequence 80% to 100% identical to that of a mammalian thrombin.

20 34. A prothrombin or prothrombin-related polypeptide according to claim 33, wherein the mammalian thrombin is human thrombin.

sub 27 35. A prothrombin or prothrombin-related polypeptide according to claim 34, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human thrombin.

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36. A prothrombin or prothrombin-related polypeptide according to claim 31, wherein the prothrombin or prothrombin related polypeptide comprises a region having an amino acid sequence 80% to 100% identical to that of a mammalian prothrombin.

37. A prothrombin or prothrombin-related polypeptide according to claim 36, wherein the mammalian prothrombin is human prothrombin.

sub Q⁸ 38. A prothrombin or prothrombin-related polypeptide according to claim 37, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human prothrombin.

39. A prothrombin or prothrombin-related polypeptide according to claim 38, wherein activity is determined by a chromogenic assay of amidolytic activity or by APTT assay.

40. A composition comprising a prothrombin or a prothrombin-related polypeptide produced in a transgenic organism.

41. A composition according to claim 40, wherein the prothrombin or prothrombin-related polypeptide differs in its post-translational modification from naturally occurring prothrombin polypeptides.

42. A composition according to claim 41, wherein the prothrombin or prothrombin-related polypeptide differs from naturally occurring prothrombins in any one or combination of its glycosylation, γ -carboxylation or activation by proteolytic processing.

sub Q⁹ 43. A composition according to claim 43, wherein the prothrombin or prothrombin-related polypeptide has a specific activity 75% to 125% of that of purified human prothrombin.

44. A composition according to claim 43, wherein the prothrombin or

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prothrombin related polypeptide comprises a region having an amino acid sequence 80% to 100% identical to that of a mammalian thrombin.

45. A composition according to claim 44, wherein the mammalian thrombin is human thrombin.

5 Sub Q¹⁰ 46. A composition according to claim 45, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human thrombin.

47. A composition according to claim 43, wherein the prothrombin or prothrombin-related polypeptide is human prothrombin.

10 Sub Q¹¹ 48. A composition according to claim 47, wherein the prothrombin or prothrombin-related polypeptide comprises a region having the amino acid sequence of human prothrombin.

49. A composition according to claim 48, wherein, wherein activity is determined by a chromogenic assay of amidolytic activity or by APTT assay.

15 50. A composition according to claim 40, wherein the prothrombin or prothrombin-related polypeptide is produced in milk of a non-human transgenic female mammal.

51. A composition according to claim 50, wherein the composition is milk of the transgenic mammal.

20 52. A composition according to claim 50, wherein the composition is derived from milk of the transgenic mammal.

Sub Q¹² 53. A method for treating a wound in a patient comprising a step of administering to said patient a composition according to any of claims 40 through 49

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54. A method for treating a wound in a patient comprising the step of ~~contacting the wound with a composition according to any of claims 40 through 49.~~

55. A method for producing a prothrombin or a prothrombin-related polypeptide comprising expressing the prothrombin or prothrombin-related polypeptide in a transgenic organism and isolating from the transgenic organism the prothrombin or prothrombin-related polypeptide.